(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 20 October 2005 (20.10.2005)

(10) International Publication Number WO 2005/098244 A3

(51) International Patent Classification: *F16B 13/08* (2006.01) *B25B 23/00* (2006.01)

(21) International Application Number:

PCT/IB2005/000898

(22) International Filing Date: 6 April 2005 (06.04.2005)

(25) Filing Language: English

(26) Publication Language: English

(**30**) **Priority Data:** 0403675

8 April 2004 (08.04.2004) FR

(71) Applicant (for all designated States except US): SOCIETE DE PROSPECTION ET D'INVENTIONS TECHNIQUES SPIT [FR/FR]; 150 Route de Lyon, F-26501 Bourg-Les-Valence (FR).

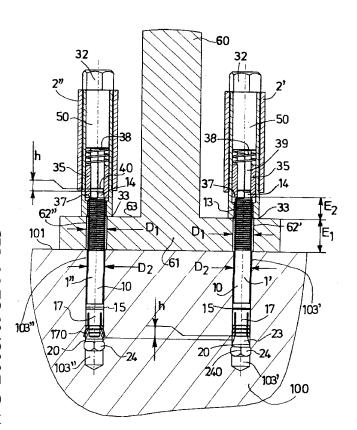
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): POURTIER, Fabrice [FR/FR]; Lotissement Lou Coumbelou No. 7, F-26800 Portes Les Vallence (FR). RICORDI, Christian [FR/FR]; 57 Rue de la Capitainerie, F-26500 Bourg Les Vallence (FR).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

 as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

[Continued on next page]

(54) Title: METHOD OF FASTENING A GUARD RAIL BY MEANS OF A GUARD RAIL BOLT, THE GUARD RAIL BOLT AND THE TOOL FOR FASTENING THE GUARD RAIL BOLT



(57) Abstract: The invention relates to a method of fastening a guard rail (60) to a concrete slab (100) by means of a self-expanding and self-undercutting bolt (1, 1', 1 ") comprising a dowel (10) having expanding lugs (17) and an expansion core (20, 23), the method comprising a phase consisting in drilling a hole (103', 103") in the slab, a phase consisting in driving the bolt in to a desired depth (El + E2)independent of the depth of the hole, a dynamic tightening phase (h) resulting in the formation of the undercut and a static tightening phase of the guard rail. The guard rail bolt comprises the dowel (10) and a counter-dowel (20). The dowel (10) comprises at its fastening end (11) a guard rail fastening head (13) rigidly connected at its screwing end (12) by means of incipient fracture means (15) to a ring (16) provided with expansion lugs (17). The tool (2) for fastening the guard rail bolt comprises means (32, 50, 39, 35) for driving it in rotation and complementary means (31, 34) for controlling the driving depth of the bolt (1).

WO 2005/098244 A3



- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

Published:

with international search report

(88) Date of publication of the international search report:
6 April 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.